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NESTING ASSOCIATION BETWEEN THE WOODPIGEON (*Columba palumbus*) AND THE HOBBY (*Falco subbuteo*)

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Nest predation is the main cause of breeding failure in birds (Ricklefs 1969). Various mechanisms for defending nests against predators have evolved. In their classification of nest defenses, Collias and Collias (1984) recognized,

among others, species which use “protective nesting association with formidable species”; the formidable species can be large birds of prey, wasps, bees or termites and their nests, or humans and their habitations. It is presumed

that potential predators risk death or serious injury from the dangerous species, if they try to prey on nests of the protection-seeking species. It is usually said that in this kind of symbiosis the species seeking protection do not incur intrinsic costs such as predation or egg and chick loss due to attacks from the associated dangerous species (Collias and Collias 1984).

We describe an association between nesting Woodpigeons and Hobbies. Apart from Bijlsma (1984) there have only been anecdotal descriptions of this phenomenon by various authors, reviewed by Collar (1978) and by Bijlsma (1984). Cain et al. (1982) and Kazakov (1976, in Cramp 1985) have reported the association between Woodpigeons and other raptors.

STUDY AREA AND METHODS

The study was carried out in a 62 km² plot bordering the course of the Po River, in northern Italy, where poplar (*Populus* sp. cultivars) plantations predominated. These host a dense population of nesting Hobbies with 25.8–29.0 pairs/100 km² and a mean nearest neighbor distance of 1.5 km (SD = 0.7, $N = 35$). This is one of the highest densities so far recorded (Bogliani 1992). The poplars are mainly from a single clone (I-214) and are therefore genetically identical. They are planted at regular intervals, with 5–6 m between trees.

The Hobby used only Hooded Crow (*Corvus corone cornix*) nests, selecting those in plots with larger trees (circumference at 130 cm greater than 100 cm). Mean hatching date was 18 July, based on 29 nests closely observed from 1985 to 1988.

Observations on breeding biology were carried out from 1985–88. Nests were searched for during July and August by inspecting all abandoned Hooded Crow and Woodpigeon nests. In 1987 the occurrence of both the Hobby and the Woodpigeon was carefully checked in 25 plots (surface of each plot 0.2–1.0 km²) with poplars of the suitable size. A detailed map, showing each tree, Hooded Crow and Woodpigeon nest within a radius of 100 m from 11 of the 18 Hobby nests found in 18 plots was drawn.

RESULTS AND DISCUSSION

Woodpigeon and Hobby nests were significantly associated in the same plots. Of 17 plots with nesting Woodpigeons, only 1 did not also simultaneously host the Hobby. On the other hand, the Woodpigeon was absent in only 2 of the 18 plots with Hobby nests (Fisher exact test, $P = 0.001$).

Woodpigeon nests tended to be clumped around a Hobby nest, and in most cases were less than 40 m from the falcon nest (Fig. 1). We found a significant difference between the observed frequency of occurrence in five 20 m distance classes from the Hobby nest, and the expected frequency if the trees in the plot were used at random ($\chi^2 = 103$, $df = 4$, $N = 45$, $P < 0.001$; Fig. 1). The ratio of used vs. available trees was highest in the nearest distance class. The minimum distance was 5 m, the nearest tree to the Hobby nest; there were no cases of simultaneous nesting on the same tree. The 20 to 40 m distance class was also preferred, while over 40 m Woodpigeon nests were

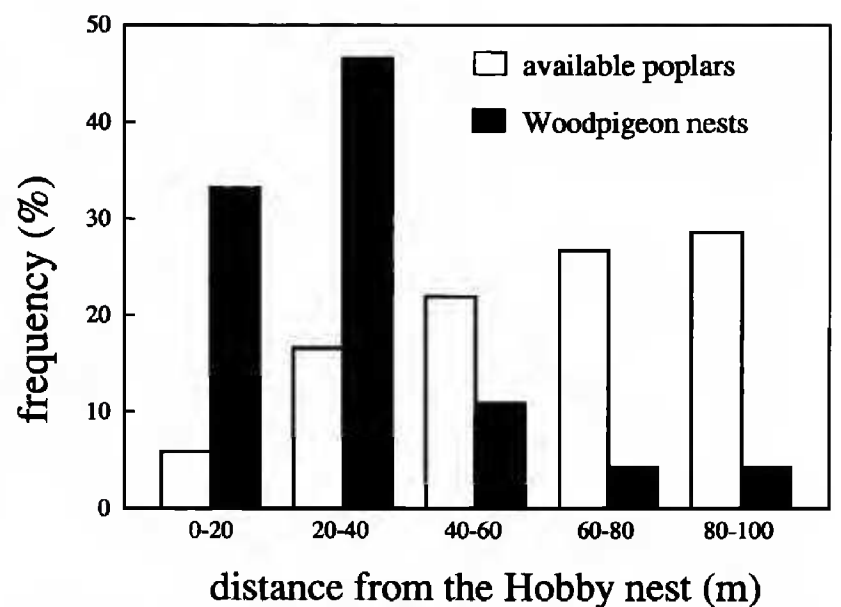


Figure 1. Woodpigeon use of poplars for nesting ($N = 45$) at varying distances from Hobby nests ($N = 11$) northern Italy and availability of poplars within the same distance classes ($N = 6866$).

less frequent than expected. The average number of Woodpigeon nests present within 100 m of the 11 Hobby nest was 4.1 (SD = 1.8).

The Woodpigeon started nest building after Hobbies were settled in their nest and therefore apparently sought the association with the raptor. It appears unlikely that the association was simply due to their sharing the same macro- and micro-habitat requirements. Poplar plantations with large trees suitable for both species were widely available in the study area.

We were unable to identify a preference by the Hobby for certain micro-habitat features such as tree and plantation structure, using univariate and multivariate statistical techniques with a set of 11 variables. The Hobby seemed to choose crow nests only on the basis of the macro-habitat and the need to space out the nests, but was unselective as regards micro-habitat (Bogliani et al. 1992). Trees close to the raptor nests were highly preferred by nest building Woodpigeons. Collar (1978) has suggested that the strong preference by the Woodpigeon for nesting very close to the Hobby may serve to protect the former from nest predators, especially the crows. The Hooded Crow is very common in poplar plantations of our study area, where it reaches very high densities. Crow nest density varies between 14–46 nest per km² (Quadrelli 1985). The Woodpigeon is likely to suffer from crow predation, as stated by Tomialojc (1978). The Hobby vigorously attacks all large birds, such as Grey Herons (*Ardea cinerea*) Herring Gulls (*Larus cachinnans*), Black Kites (*Milvus migrans*), Common Buzzards (*Buteo buteo*) and kestrels (*Falco tinnunculus*) which fly within a distance of ca. 50 m of its nest. Hobbies are especially persistent in attacking and driving away Hooded Crows (pers. observation). It may be presumed that Woodpigeons gain the advantage of reduced nest predation if they nest very close to the Hobby, whose attacks keep away crows. The pattern of breeding success of Woodpigeons in the Netherlands was consistent with this prediction (Bijlsma 1984). Although

Woodpigeons expose themselves to the risk of being preyed on by the falcon, this risk is apparently low. As a matter of fact, only two pluckings containing adult Woodpigeon feathers were found on two of the 46 Hobby nests inspected in the study area. It is worth noting that no association seemed to exist between the Woodpigeon and the four Common Buzzard nests found in poplar plantations during this study. Indeed the buzzard commonly preys on Woodpigeons (Cramp 1980, G.B. pers. observation) and therefore the association would be fatal to this latter species.

RESUMEN.—En plantaciones de álamo en el norte de Italia, donde halcones de la especie *Falco subbuteo* anidan con relativamente alta densidad, palomas de la especie *Columba palumbus* construyen sus nidos agrupándoles muy cerca a los de los halcones. Se presume que esta conducta de las palomas reduce la incidencia en la depredación que en sus nidos hacen los cuervos de la especie *Corvus corone cornix*. Estos son fieramente atacados y echados fuera por el *F. subbuteo*. Sin embargo, las palomas adultas corren el riesgo de ser presas de los halcones; residuos de *C. palumbus* han sido hallados entre las plumas de las aves que han sido presas de ellos. Este riesgo, sin embargo, podría ser más alto, en la misma área de estudio, si las palomas anidaran cerca de los nidos de otra especie de raptora, tal como la *Buteo buteo*, que normalmente hace presa de ellas. Esto puede explicar por qué las palomas no se asocian con esa especie.

[Traducción de Eudoxio Paredes-Ruiz]

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